"A COMPARATIVE STUDY TO ANALYSE THE EFFECTIVENESS OF KINESIOLOGY TAPING AND CYRIAX DEEP FRICTION MASSAGE IN LATERAL EPICONDYLITIS AMONG BADMINTON PLAYERS ''

Project submitted to

THE TAMILNADU DR. M.G.R MEDICAL UNIVERSITY

Towards the partial fulfillment of the requirement for the degree of

MASTER OF PHYSIOTHERAPY

(SPORTS PHYSIOTHERAPY)

REG. NO: 271550121

CHERRAAN'S COLLEGE OF PHYSIOTHERAPY

CHERRAAN'S INSTITUTE OF HEALTH SCIENCES

COIMBATORE, TAMILNADU, INDIA

MAY-2019

CERTIFICATE

CERTIFICATE

This is to certify, that is the bonafide record of project work, done by candidate bearing University Registration Number 271550121 and submitted for the partial fulfillment of **MASTER OF PHYSIOTHERAPY** Degree course requirements at **CHERRAAN'S COLLEGE OF PHYSIOTHERAPY,** COIMBATORE, under **THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY.** CHENNAI.

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Professor Principal & Professor

Date**:** _____ Date**:** _____

Internal Examiner External Examiner

Project work evaluated on _____

DECLARATION

DECLARATION

The work embodied in this project **entitled "A COMPARATIVE STUDY TO ANALYSE THE EFFECTIVENESS OF KINESIOLOGY TAPING AND CYRIAX DEEP FRICTION MASSAGE IN LATERAL EPICONDYLITIS AMONG BADMINTON PLAYERS ''**submitted to **THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI,** in partial fulfillment for the degree of **MASTER OF PHYSIOTHERAPY,** was the original work carried out by me and has not been submitted in part or full for any other degree/diploma at this or any other institute/university. All the ideas and references have been duly acknowledged.

_____ _____

Signature of supervisor Signature of student

Mr.. A.Chinnasamy MPT(Sports)

Professor

Date: _____

ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

First of all I express my sincere gratitude to the GOD ALMIGHTY**,** who has given me the required knowledge, wisdom, strength, & opportunity to do this project successfully.

This study will be an incomplete one without my gratitude towards my PARENTS & FRIENDS.

I want to acknowledge my sincere thanks to our CHAIRMAN, & all other staffs of CHERRAAN INSTITUTE OF HEALTH SCIENCE, Coimbatore.

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I owe my sincere thanks to MR.A.CHINNASAMY, M.P.T, PROFESSOR my guide for his inspiration, assistance & support, from the inception of this research study to its completion.

I take this opportunity to thank each & every PATIENTS who took part in this study for their kind co-operation & needed information.

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ABSTRACT

ABSTRACT

DESIGN: This study is a pre test and post test experimental design comparative in nature.

PARTICIPATIONS: Twenty subject were selected treated with course cyriax deep friction massage and kinesiological taping.

MATERIALS AND METHODS: Twenty male subjects who has been diagnosed as lateral epicondylitis with mean age 15-24 years were taken as subjects in the study. All subjects were randomly divided in two group A and B with ten subject in each group GROUP A underwent received cyriax deep transverse friction massage. GROUP B underwent treatment of Received kinesiological taping and cyriax deep transverse friction massage.

OUTCOME MEASURE: The outcome was measured by using to pain by using visual analog scale and range of motion was assessed by goniometer for both groups.

RESULT: The study result showed more statistical significance improvement in elbow flexion range of motion and reduced Pain in lateral epicondylitis in badminton players of both Control group and experimental group. But there is statistically greater improvement in experimental group in which the subjects are given deep transverse friction and kinesiotaping.

CONCLUSION: It is concludes that there is statistically significant improvement in elbow flexion range of motion and reduced Pain in lateral epicondylitis in badminton players of both Control group and experimental group. But there is statistically greater improvement in experimental group in which the subjects are given deep transverse friction and kinesiotaping.

KEYWORDS: Lateral epicondylitis, cyriax deep friction massage, kinesiological taping.

INTRODUCTION

I INTRODUCTION

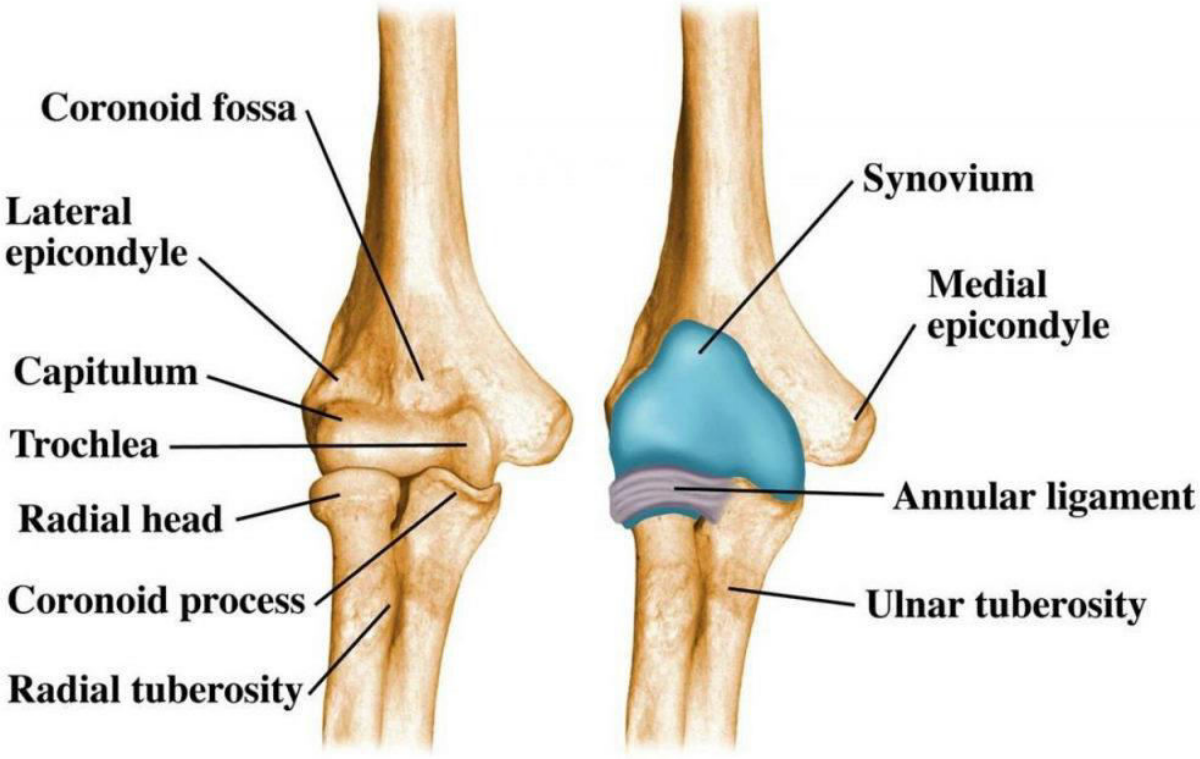
The elbow joint is a complex hinge joint formed between the distal end of the humerus in the upper arm and the proximal ends of the ulna and radius in the forearm. The elbow allows for the flexion and extension of the forearm relative to the upper arm, as well as rotation of the forearm and wrist.

The rounded distal end of the humerus is divided into two joint processes — the trochlea on the medial side and the capitulum on the lateral side. The pulley-shaped trochlea forms a tight joint with the trochlear notch of the ulna surrounding

On the lateral side, the concave end of the head of the radius meets the rounded, convex capitulum to complete the elbow joint. The loose union of the capitulum of the humerus and the head of the radius allows the radius to pivot as well as flex and extend. The pivoting of the radius allows for the supination and pronation of the hand at the wrist.

Like all other synovial joints, a thin layer of smooth articular cartilage covers the ends of the bones that form the elbow joint. The joint capsule of the elbow surrounds the joint to provide strength and lubrication to the elbow. Slick synovial fluid produced by the synovial membrane of the joint capsule fills the hollow space between the bones and lubricates the joint to reduce friction and wear.

The elbow joint functions as a link between the shoulder and wrist providing an exceptional amount of stability and motion. The elbow joint should not be considered a simple hinge joint; rather there are important out-of-plane motions that affect implant design and surgical reconstruction of the elbow. Forearm rotation, which occurs as the radius wraps around the ulna, guided by the soft tissues at the wrist and elbow joints, also contributes to upper extremity mobility. Force transmission in the forearm is a complex interaction of the radius, ulna, and interosseous membrane. Forces at the wrist affect the transmission of force through the forearm to the elbow joint. During some activities, forces at the elbow joint can reach several times body weight. These motion, stability, and force interactions allow for the forearm's function. It should be recognized that an event at the elbow joint affects the forearm and the wrist, and conversely injury or disease at the wrist joint can affect the elbow.



Tennis elbow (or) lateral epicondylitis is one of the most common lesions of the forearm. It is a lesion affecting the origin of the tendons of the muscles that extend the wrist is mainly extensor carpi radialis brevis (ECRB). The dominant arm is commonly affected among men and women with prevalence of 1-3% & in the 30-60 years.[1]Tennis elbow is a syndrome characterized by an insidious onset of elbow pain brought on by wrist extension with pronation or supination and aggravated by gripping.[2]

The commonest causative factor is elbow overuse (or) repetitive concentric and eccentric contractions of the extensor muscles (mainly ECRB) which stabilize the wrist. This repetitive stress (heavy lifting, repetitive hammering, scissoring, twisting and tennis players with backhand stroke & inadequate forearm extensor power & endurance) produces chronic overload due to biomechanical positional fault resulting in micro tearing & fibrosis of the common wrist extensor origin. This presents as pain on gripping activities& tenderness over the outer edge of the elbow.[1,3]

Lateral epicondylitis affects 1-3% of the population, only 5% of all patients seen are recreational tennis players.[4]This condition was first named by Morris (1882) who called it lawn tennis arm.[5]

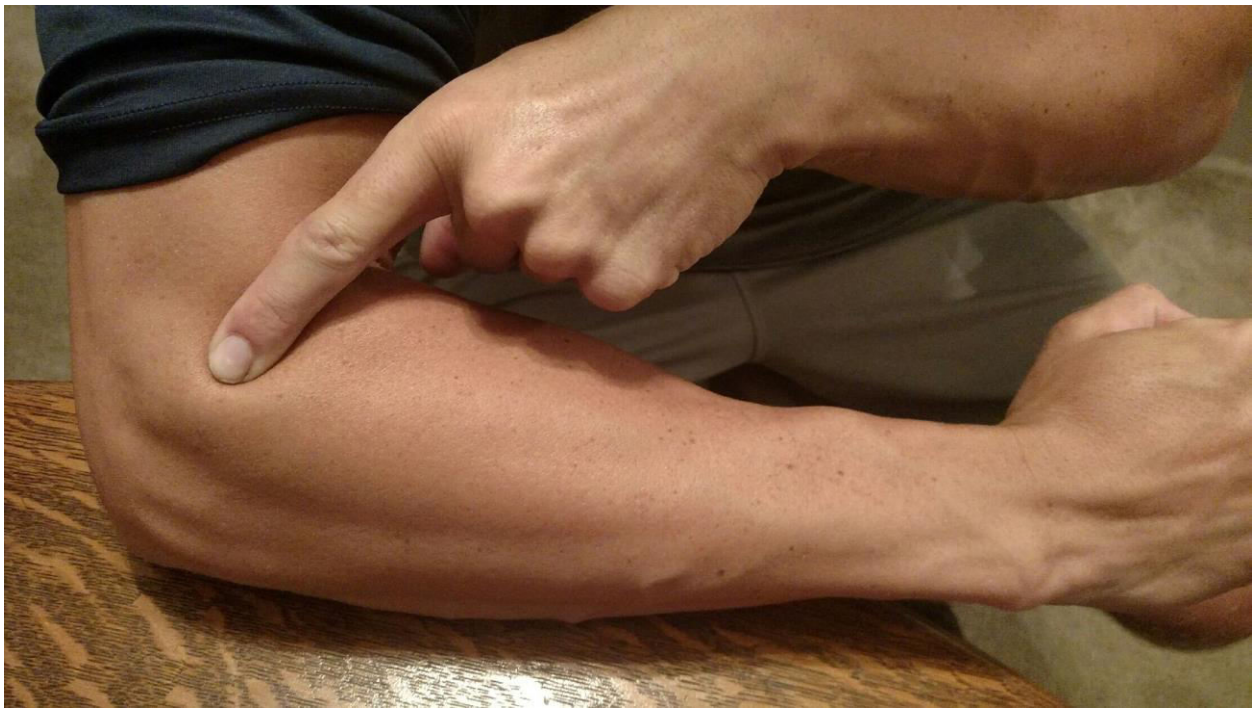
Cyriax advocated the use of deep transverse friction massage in combination with mill's manipulation in treating lateral epicondylitis .[6,7]Deep transverse friction (DTF) is also known as deep friction massage is a specific type of connective tissue massage applied precisely to the soft tissue structures such as tendons. It was developed in an empirical way by cyriax and is currently used extensively in rehabilitation practice.[6]

However, the number of research studies analysing the effectiveness of this treatment intervention is less, the reason being that most of them do not have proper randomization, blinded outcome measures, and accurate functional outcome questionnaires. For the above-mentioned reasons, further research is warranted to find out the effectiveness of cyriax physiotherapy intervention.[8-10]

Kinesiological taping (KT) was developed by Kenzo kase in 1973 and was applied by using a material, called the kinesio-tex. this material is made from % 100 cotton, which has a similar thickness and structure to the skin, and can stretch longitudinally at a rate of 30-40%. The tape is resistance to water and can remain up to seven days. KT has physiological effects such as reducing pain or abnormal sensations, promoting drainage of the blood and lymphatic fluid under the skin and correcting joint arrangement.[11]

Taping is a cost effective treatment alternative for many common injuries & overuse syndrome (Hill frank 1991). Taping is applied across the joint in several layers & is positioned to provide outside support & restrict forces that would apply stress on an injured part. Mulligan tapping mainly aims to mainly reduce pain, improve function and bio-mechanics. The aim of taping is to control the fascia directly, establish proper structural alignment, improve muscular recruitment & also increase proprioception stimulation enhancing static and dynamic neuromuscular retraining by balancing the tissue length/ tension relationship & motor control. KT is a commonly used intervention in the management of number of clinical conditions, including myofascial pain syndrome, subacromial impingement syndrome, Hemiplegia, lymphedema, tendinitis, patellofemoral pain syndrome, knee osteoarthiritis,and LE.[14-21]

IMAGE SHOWING THE SITE OF LATERAL EPICONDYLITIS



1.1 NEED FOR THE STUDY

By doing this study the outcome of this study result can be used for tennis elbow patients to treat them effectively.

1.2 STATEMENT OF THE PROBLEM

"A COMPARATIVE STUDY TO ANALYSE THE EFFECTIVENESS OF KINESIOLOGY TAPING AND CYRIAX DEEP FRICTION MASSAGE IN LATERAL EPICONDYLITIS AMONG BADMINTON PLAYERS ''

1.3 AIMS AND OBJECTIVES

To compare the effect of kinesiology taping and cyriax technique on pain and range of motion in lateral epicondylitis patients.

1.4 HYPOTHESIS

Null hypothesis

There shall be no statistically significant difference in pain and range of motion in lateral epicondylitis patient after the intervention of tapping & cyriax technique.

Alternative hypothesis

There shall be statistically significant difference in pain and range of motion in the lateral epicondylitis patient after the intervention of tapping & cyriax techniques.

REVIEW OF LITERATURE

II REVIEW OF LITERATURE

2.1 LITERATURE REGARDING LATERAL EPICONDYLITIS

2.2 LITERATURE REGARDING CYRIAX DEEP TRANSVERSE FRICTION MASSAGE

2.3 LITERATURE REGARDING KINESIOLOGICAL TAPING

2.1 LITERATURE REGARDING LATERAL EPICONDYLITIS

Alfonso vaquero-picado et al (2016):

- Lateral epicondylitis, also known as 'tennis elbow', is a very common condition affecting mainly middle-aged patients.
- The pathogenesis remains unknown but there appears to be a combination of local tendon pathology, alteration in pain perception and motor impairment.
- The diagnosis is usually clinical but some patients may benefit from additional imaging for a specific differential diagnosis.
- The disease has a self-limiting course of between 12 and 18 months, but in some patients, symptoms can be persistent and refractory to treatment.
- Most patients are well-managed with non-operative treatment and activity modification. Many surgical techniques have been proposed for patients with refractory symptoms.
- New non-operative treatment alternatives with promising results have been developed in recent years.

Fozia et al(2015): Patients with conditions like tennis elbow are frequently referred to physiotherapy. Patients with this condition suffer from pain and tenderness over lateral epicondyle, which hampers their activities of daily living. Lateral epicondylitis (tennis elbow) is the most frequent type of myotendinosis and can be responsible for substantial pain and loss of function of the affected limb. Muscular biomechanics characteristics and equipment are important in preventing the conditions. This article presents on overview of the current knowledge on lateral epicondylitis and focuses on, conservative treatment and recent surgical techniques are outlined. This information should assist health care practitioners to manage symptoms, improve activity and reduce relapse who treat patients with this disorder

Homas de smedt et al(2007): Lateral epicondylitis (tennis elbow) is the most frequent type of myotendinosis and can be responsible for substantial pain and loss of function of the affected limb. Tennis biomechanics, player characteristics and equipment are important in preventing the condition. This article presents an overview of the current knowledge on lateral epicondylitis, and focuses on treatment strategies. Conservative and surgical treatment options are discussed, and recent techniques are outlined.

Tennis elbow is a painful condition affecting the tendinous tissue of the origins of the wrist extensor muscles at the lateral epicondyle of the humerus, leading to loss of function of the affected limb. Therefore it can have a major impact on the patient's social and professional life.[1]

This article provides an overview of the different aspects of tennis biomechanics and the importance of player characteristics and equipment in preventing tennis elbow.

Waseem m et al(2005): Lateral epicondylitis (Tennis Elbow) is the most frequent type of myotendinosis and can be responsible for substantial pain and loss of function of the affected limb. Muscular biomechanics characteristics and equipment are important in preventing the conditions. This article present on overview of the current knowledge on lateral Epicondylitis and focuses on Etiology, Diagnosis and treatment strategies, conservative treatment are discussed and recent surgical techniques are outlined. This information should assist health care practitioners who treat patients with this disorder.

Journal of Orthopedic & Sports Physical Therapy(1994): Tennis elbow is a common yet sometimes complex musculoskeletal condition affecting many patients treated by physical therapists. The purpose of this article is to review the anatomy, clinical examination, differential diagnosis, conservative care, and surgical treatment for tennis elbow or lateral epicondylitis. Particular attention is given to determining the precise pathological cause of lateral epicondylitis, with consideration of intrinsic and extrinsic factors associated with this condition. This information should assist health care practitioners who treat patients with this disorder.

2.2 LITERATURE REGARDING CYRIAX DEEP FRICTION MASSAGE

Prabhakar AJ, et al.(2013): stated that the present study provided evidence to support the use of cyriax physiotherapy in relieving pain, improving grip strength and functional performance in subject with tennis elbow.

Rajadurai Viswa, et al(2012): stated that the groups that performed supervised exercise program for 4 weeks showed significantly greater improvement in reduction of pain and functional status than the cyriax physiotherapy treatment. The favourable results in the present study indicate the need for further research examining the incorporation of supervised exercise program into multimodal treatment regimen.

Madhusmita Koch et al(2015): stated that the result of this study demonstrate that both the cyriax with LLLT and eccentric strengthening and stretching exercise with LLLT experienced significant improvements in pain, pain free grip strength and functional status in chronic lateral epicondylitis patients post treatment, but both the groups experienced equal outcomes for all variables in comparision to one another. It can be concluded that both regimens of treatment are equally effective in chronic epicondylitis.

Vinod babu K. Et al(2014):stated that it is concluded that there is significant long term effect with greater percentage of improvement in pain and functional ability upto 2 weeks follow-up following 4 weeks of combined cyriax physiotherapy with supervised exercise program for subjects with tennis elbow. It is clinically important to considered combined cyriax physiotherapy and supervised exercise program for patients with tennis elbow when the treatment effect is aiming for long term effect.

Laurianne M Loew(2014): We do not have sufficient evidence to determine the effects of deep transverse friction on pain, improvement in grip strength, and functional status for patients with lateral elbow tendinitis or knee tendinitis, as no evidence of clinically important benefits was found. The confidence intervals of the estimate of effects overlapped the null value for deep transverse friction massage in combination with physical therapy compared with physical therapy alone in the treatment of lateral elbow tendinitis and knee tendinitis. These conclusions are limited by the small sample size of the included randomized controlled trials. Future trials, utilizing specific methods and adequate sample sizes, are needed before conclusions can be drawn regarding the specific effects of deep transverse friction massage on lateral elbow tendinitis.

2.3 LITERATURE REGARDING KINESIO TAPPING

Gourav banergee et al (2016): Current evidence-based practice guidelines for the management of nonacute persistent and recurring musculoskeletal-related pain have emphasized the use of holistic multidisciplinary approaches including nonpharmacological therapies. Kinesiology taping is a simple, economical, easy-to-apply, nondrug therapeutic technique that is used by health-care professionals for managing and rehabilitating musculoskeletal injuries. High-quality research on kinesiology taping is limited, although recent evidence suggests that kinesiology taping may have a small effect in mitigating pain and may be associated with mild cutaneous side effects. We present a review of the principles of kinesiology taping and an evaluation of research on its efficacy to catalyze discussion among clinicians about the merits of kinesiology taping as an adjunct for pain management.

Evans et al (2012): Both techniques significantly decreased the grip strength, but there was no significant difference between two methods of Kinesio tape. The author finally suggested that these Kinesio tape methods in individuals with lateral epicondylitis can have positive results and it can be applied together with other therapeutic methods. However, further studies are required to compare these two methods on individuals with lateral epicondylitis (41).

Mohammed taghi hollizas et al(2013): The taping technique, as applied in this study demonstrates an impressive effect on wrist extension force and grip strength of patients with TE. Elbow taping also reduces pain at the lateral aspect of the elbow in these patients.

Vicenzino. et al (2003): The Kinesio tape technique showed improvement in grip strength without pain in relation to placebo and control group. The pressure pain threshold was positive but no statistically significant.

Shamsoddini et al (2010): There was a significant difference in extension grip between the affected arm and the unaffected one. Also, changes in grip strength indicated significant statistical improvement in affected arm in relation to the one. Changes in pain was also positive in the affected arm.

MATERIALS AND METHODOLOGY

III MATERIALS AND METHODOLOGY

3.1 STUDY DESIGN

This study was comparative study design

3.2 STUDY SETTING

The study was conducted in the out-patient department of Cherraan's college of physiotherapy, Coimbatore.

3.3 STUDY DURATION

This study was conducted for a period of 6 months.

3.4 SAMPLE METHOD

The subject were selected by convenient Sampling method.

3.5 CRITERIA FOR SELECTION

Inclusion criteria

Lateral epicondylitis

Sex- Male

Age- 25-35 years

Side- Unilateral

Exclusion criteria

Any psychological disorders

Unconscious Patients

Non-cooperative Patients

Neurological impairment

Previous surgery to the elbow region

Previous trauma to the elbow region

3.6 VARIABLES

Independent variable

Kinesiological taping

Cyriax deep friction massage

Dependent variable

Pain

Range of motion

3.7 OUTCOME MEASURES

Pain

Range of motion

3.8 OPERATIONAL TOOLS

Goniometer

Kinesiological tape

Pen

Paper

3.9 PROCEDURE

20 patients fulfilled the inclusion criteria and were recruited for this study. From that 10 patients were allotted as control group and remaining 10 patients were allotted as experimental group through convenient sampling method. Patients consent was taken by signing authorization. The demographic data and pre-intervention variables of pain and ROM were measured and documented.

Control group were given Deep Transverse friction for 10 sessions. Experimental group were given kinesiology taping with Deep transverse friction. Then their post interventions variables of pain and ROM were measured and documented. Data analysis were done on their measurement.

GROUP-A

DEEP TRANSVERSE FRICTION:

Deep transverse friction (DTF) is also known as deep friction massage is a specific type of connective tissue massage applied precisely to the soft tissue structures such as tendons. The patient is supine lying with elbow 90^0 flexion and forearm pronation. The therapist's thumb was 90^0 flexed, with the tip of the thumb lateral to the lateral epicondyle. The deep friction is given at the front of the epicondyle by the thumb onto the anterior aspect of the bone. The other fingers act as a fulcrum at the medial side of the elbow. The active phase of the deep friction was a translation movement at the front of the lateral epicondyle, with pressure applied in a medial/downward direction. The technique is administered for 10 minutes.

GROUP-B

KINESIOLOGICAL TAPING:

The V shaped tapping starts from lateral epicondyle of humerus upper part ends in above the medial epicondyle of humerus and lower part ends in the below the ulnar neck.

DEEP TRANSVERSE FRICTION:

Deep transverse friction (DTF) is also known as deep friction massage is a specific type of connective tissue massage applied precisely to the soft tissue structures such as tendons. The patient is supine lying with elbow 90^0 flexion and forearm pronation. The therapist's thumb was 90^0 flexed, with the tip of the thumb lateral to the lateral epicondyle. The deep friction is given at the front of the epicondyle by the thumb onto the anterior aspect of the bone. The other fingers act as a fulcrum at the medial side of the elbow. The active phase of the deep friction was a translation movement at the front of the lateral epicondyle, with pressure applied in a medial/downward direction. The technique is administered for 10 minutes.

3.10 STATISTICAL TOOLS

T Test Formula

T Test is often called **Student's T test** in the name of its founder "Student". T test is used to compare two different set of values. It is generally performed on a small set of data. T test is generally applied to normal distribution which has a small set of values. This test compares the mean of two samples. T test uses means and standard deviations of two samples to make a comparison. The formula for T test is given below:

$$t = \frac{\bar{x_1} - \bar{x_2}}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Where,

$x1^- x1^-$ = Mean of first set of values

$x2^- x2^-$ = Mean of second set of values

S_1 = Standard deviation of first set of values

S_2 = Standard deviation of second set of values

n_1 = Total number of values in first set

n_2 = Total number of values in second set.

The formula for standard deviation is given by:

$$S = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

Where,

x = Values given

$x^- x^-$ = Mean

n = Total number of values.

DATA ANALYSIS AND INTERPRITATION

IV DATA ANALYSIS AND ITERPRETATION

Table 4.1: Comparison of Pre values of pain in control and experimental group to check homogeneity of values.

Group	No.of subject	Mean	Standard deviation	T value	P value
Pre	10	8.1	1.21	0	1
Pre	10	8.1	0.99		

$p<.01^{NS}$

This table shows that the pre mean, SD, 't' and p values of pain in control and experimental group. There is not statistically significant difference in pre intervention of pain. So that pre intervention of homogeneity of variable of pain is maintained with $p<.01^{NS}$.

Graph 4.1: Comparison of Pre values of pain in control and experimental group to check homogeneity of values.

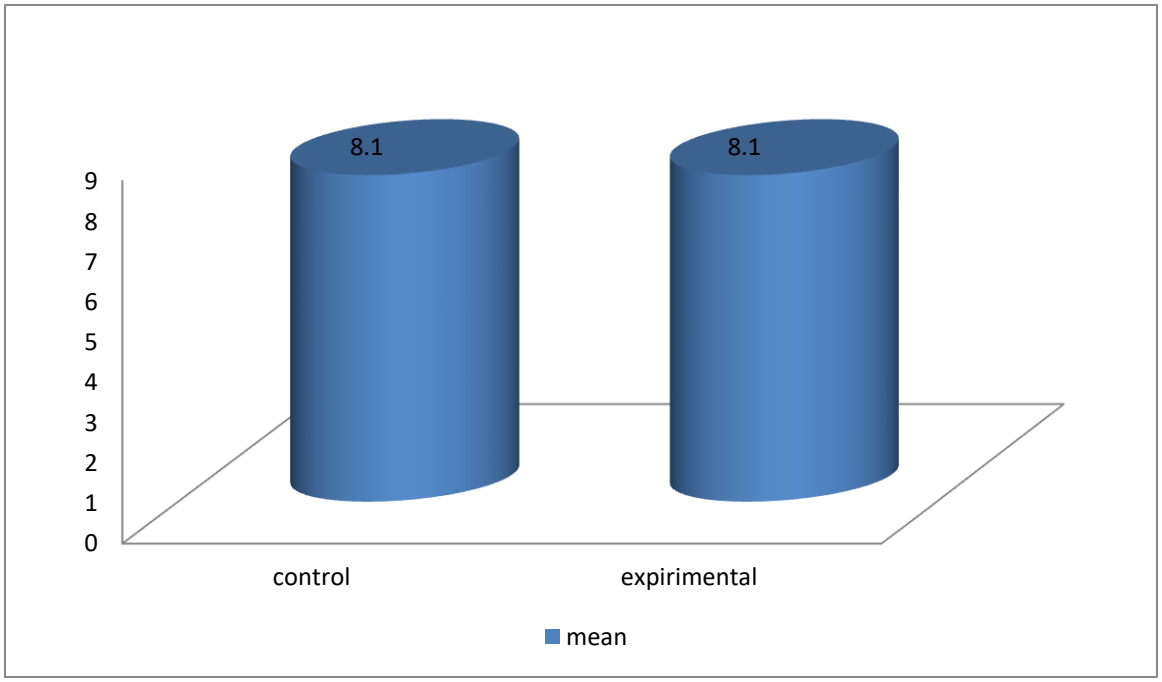


Table 4.2: Comparison of Pre values of ROM in control and experimental group to check homogeneity of values.

Group	No.of subject	Mean	Standard deviation	T value	P value
Pre	10	69.5	30.28	-1.85164	.080554
Pre	10	75.5	74.72		

$p<.01^{NS}$

This table shows that the pre mean, SD, 't' and p values of ROM in control and experimental group. There is not statistically significant difference in pre intervention of pain. So that pre intervention of homogeneity of variable of pain is maintained with $p<.01^{NS}$.

Graph 4.2: Comparison of Pre values of ROM in control and experimental group to check homogeneity of values.

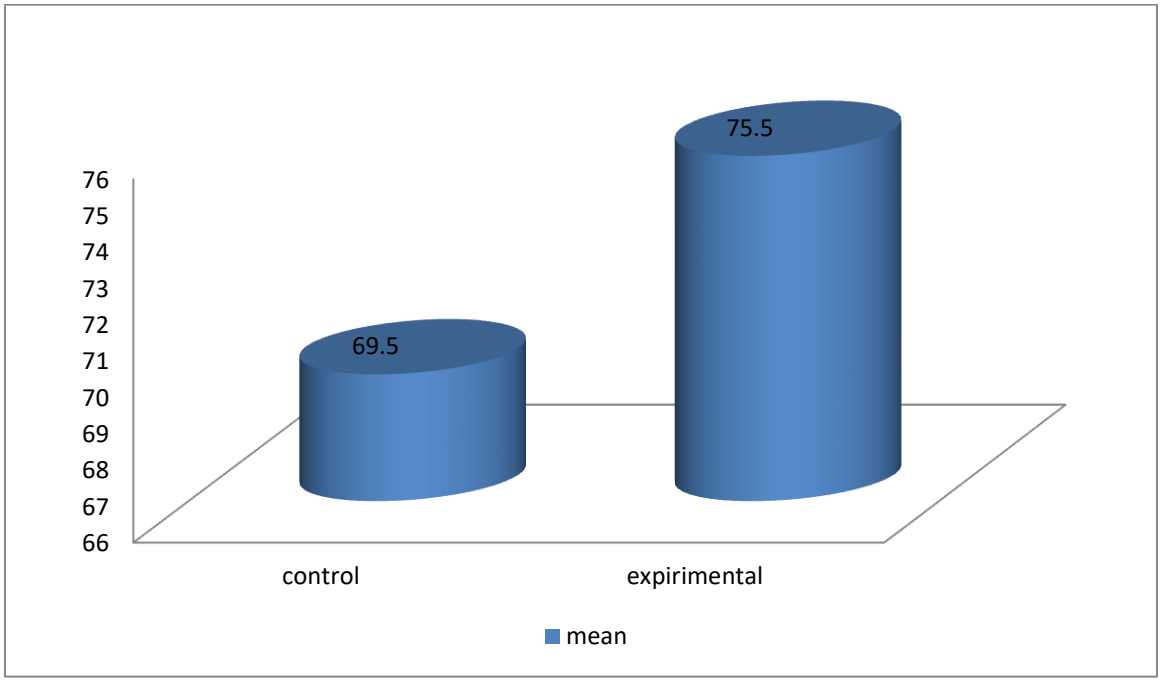


Table 4.3: Comparison of Pre and post values of pain in control group.

Group	No.of subject	Mean	Standard deviation	T value	P value
Pre	10	8.1	1.21	6.43295	.00001
Post	10	5	1.11		

$p<0.1$

This table shows that the pre mean, SD, 't' and p values of pre and post intervention ofpain in control group. There is statistically significant difference in pre and post intervention of pain.

Graph 4.3: Comparison of Pre and post values of pain in control group.

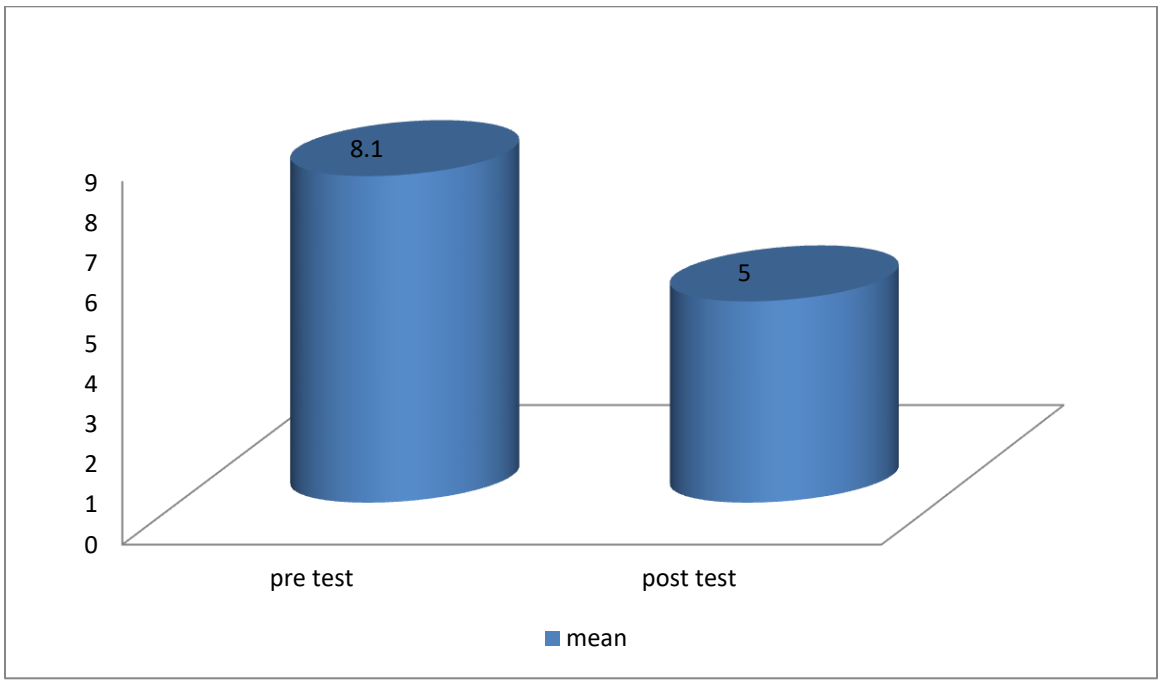


Table 4.4: Comparison of Pre and post values of ROM in control group.

Group	No.of subject	Mean	Standard deviation	T value	P value
Pre	10	69.5	30.28	-10.12394	.00001
Post	10	91.5	16.94		

p<.01

This table shows that the pre mean, SD, 't' and p values of pre and post intervention of ROM in control group. There is statistically significant difference in pre and post intervention of pain.

Graph 4.4: Comparison of Pre and post values of ROM in control group.

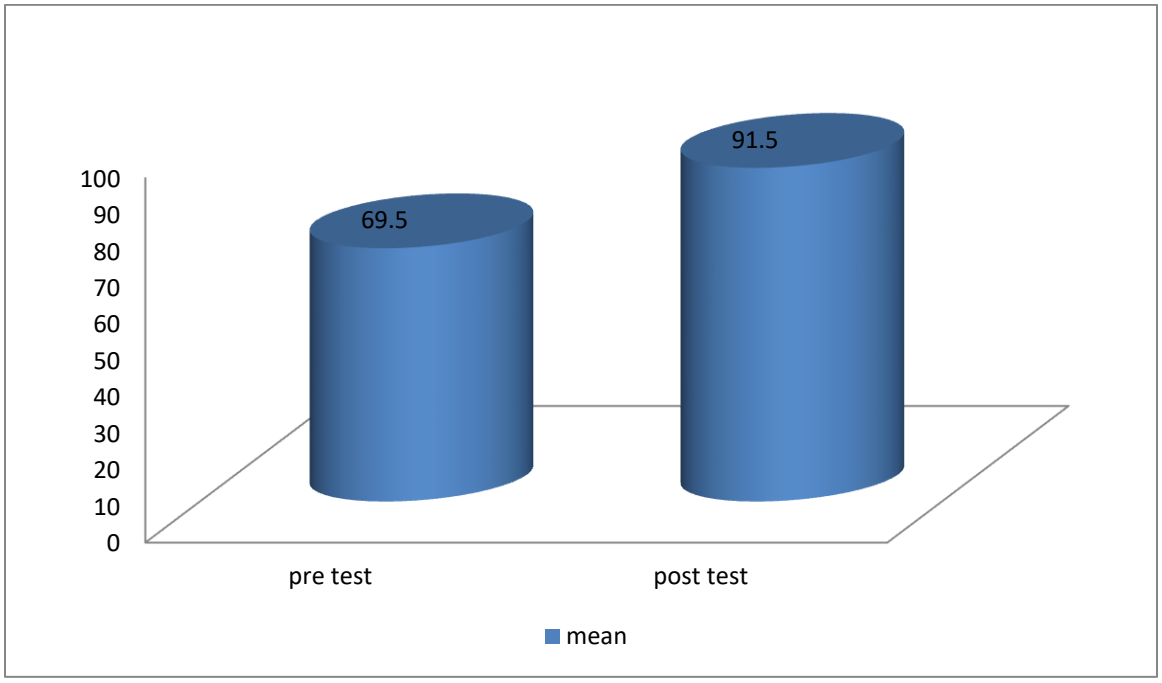


Table 4.5: Comparison of Pre and post values of pain in experimental group.

Group	No.of subject	Mean	Standard deviation	T value	P value
Pre	10	8.1	0.99	15.67673	.00001
Post	10	1.7	0.68		

$p<.01$

This table shows that the pre mean, SD, 't' and p values of pre and post intervention of pain in experimental group. There is statistically significant difference in pre and post intervention of pain.

Graph 4.5: Comparison of Pre and post values of pain in experimental group.

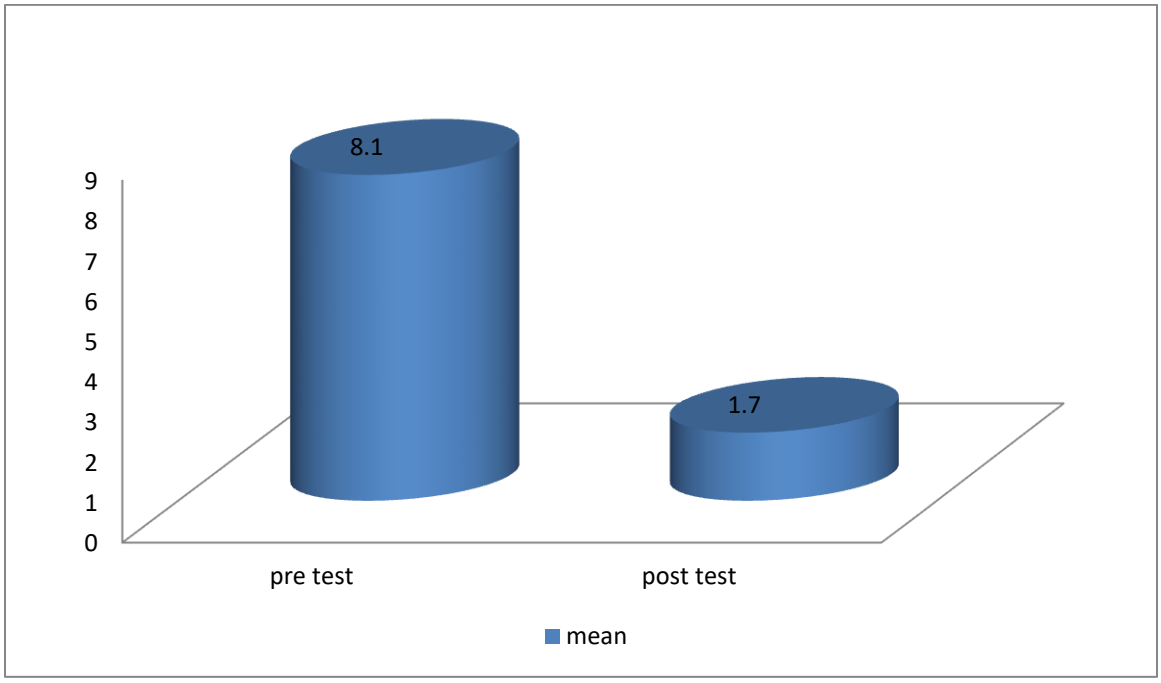


Table 4.6: Comparison of Pre and post values of ROM in experimental group.

Group	No.of subject	Mean	Standard deviation	T value	P value
Pre	10	75.5	74.72	-10.52635	.00001
Post	10	110.5	35.83		

$p<.01$

This table shows that the pre mean, SD, 't' and p values pre and post intervention of ROM in experimental group. There is statistically significant difference in pre and post intervention of pain.

Graph 4.6: Comparison of Pre and post values of ROM in experimental group.

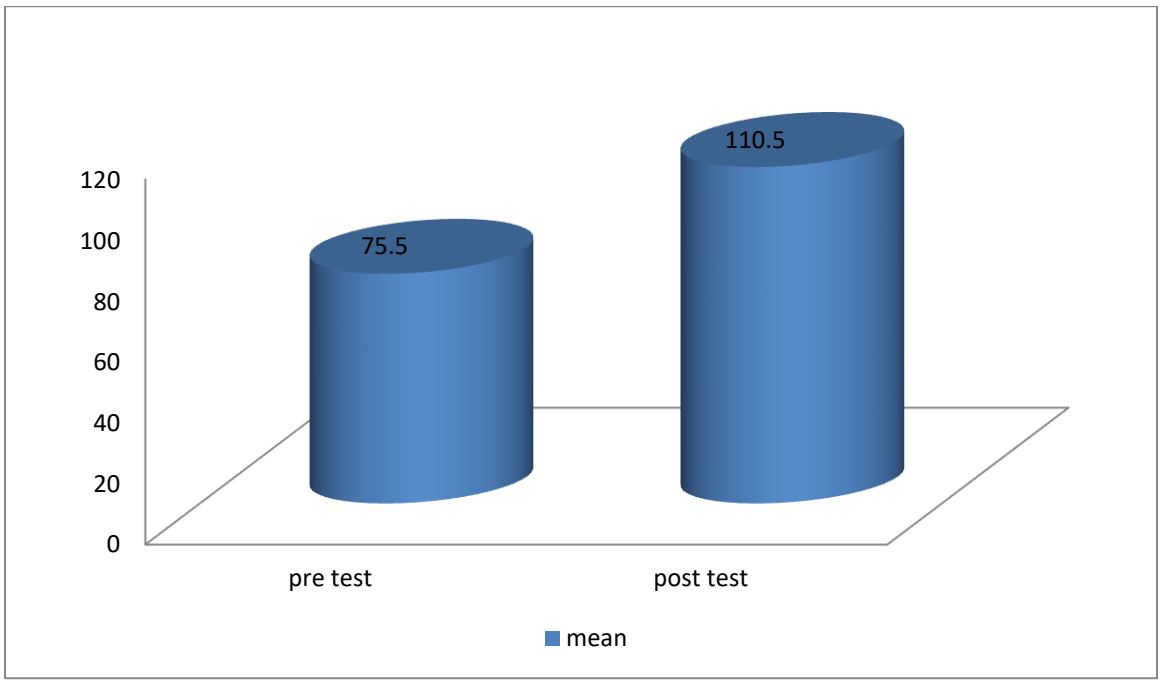


Table 4.7: Comparison of Post values of pain in control and experimental group.

Group	No.of subject	Mean	Standard deviation	T value	P value
Post	10	5	1.11	7.80229	.00001
Post	10	1.7	0.68		

p<.01

This table shows that the pre mean, SD, 't' and p values post values of pain in control and experimental group. There is statistically significant difference in post intervention of pain.

Graph 4.7: Comparison of Post values of pain in control and experimental group.

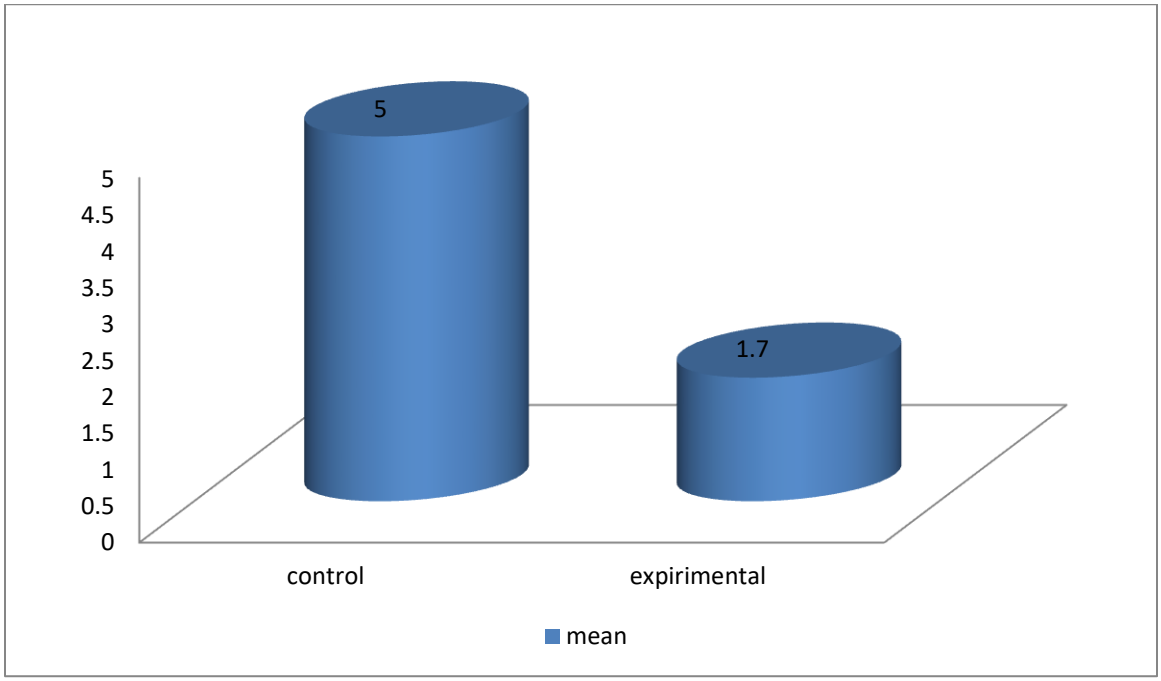


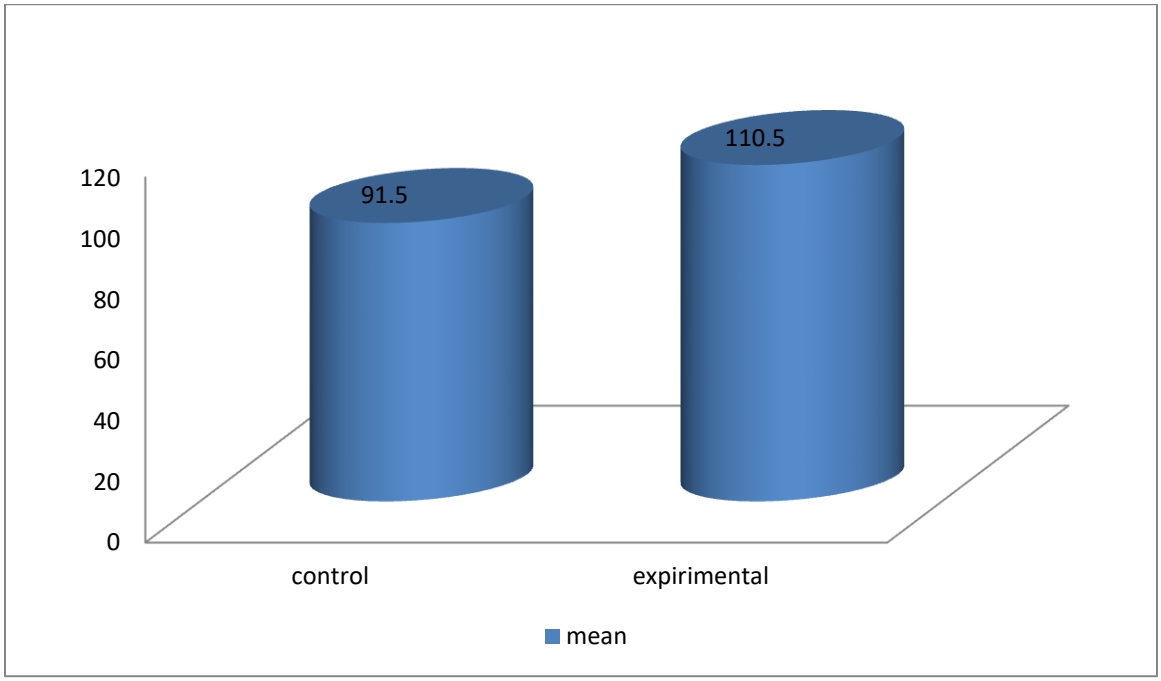
Table 4.8: Comparison of Post values of ROM in control and experimental group.

Group	No.of subject	Mean	Standard deviation	T value	P value
Post	10	91.5	16.94	-8.27043	.00001
Post	10	110.5	35.83		

$p<.01$

This table shows that the pre mean, SD, 't' and p values of post intervention of ROM in control and experimental group. There is statistically significant difference in post intervention of ROM.

Graph 4.8: Comparison of Post values of ROM in control and experimental group.



RESULT

V RESULT

The study result showed more statistical significance improvement in elbow flexion range of motion and reduced Pain in lateral epicondylitis in badminton players of both Control group and experimental group. But there is statistically greater improvement in experimental group in which the subjects are given deep transverse friction and kinesiotaping.

DISCUSSION

VI DISCUSSION

Data analysis and result of this study shows that there is homogeneity of pre intervention variables of pain (Table 4.4.1) and elbow flexion range of motion (Table 4.4.2). There is statistically significant improvement in pain and elbow range of motion in patients with p value < 0.001 (Table 4.4.3 and 4.4.4) of control group pre and post intervention values and also in experimental group (Table 4.4.5 and 4.4.6) with p value <0.01. While comparing both control and experimental group there is statistically greater improvement in experimental group in which the subjects are given kinesiology taping along with deep transverse friction. The pain and ROM of elbow with p value < 0.01 (Table 4.47 and 4.4.8). So the null hypothesis is rejected and alternate hypothesis is accepted.

This study results shows that Kinesiology taping with deep transverse friction improves ROM and reduces pain in elbow joint. So ultimately the reduction in pain and functional outcome of ROM is improved more in experimental group than control group.

Prabhakar AJ, et al.(2013) stated that the present study provided evidence to support the use of cyriax physiotherapy in relieving pain, improving grip strength and functional performance in subject with tennis elbow.

RajaduraiViswa, et al.(2012) stated that the groups that performed supervised exercise program for 4 weeks showed significantly greater improvement in reduction of pain and functional status than the Cyriax physiotherapy treatment. The favourable results in the present study indicate the need for further research examining the incorporation of supervised exercise program into multimodal treatment regimen.

Data analysis and result of this study shows that there is statically significant reduction in pain and improvement in Elbow ROM in patients with Tennis elbow with p value < 0.01 while performing Deep transverse friction but there is greater improvement in experimental group who performs Deep transverse friction along with Kinesiology taping.There is improvement in elbow ROM and Knee reduction with the mean difference of 1.7 (Table 4.4.7) and 110.5 (Table 4.4.8).

This studies result shows that the effect of deep transverse frictionmassage along with Kinesiology taping improves elbow joint functional outcomes in the form of improved Elbow ROMand reduced Pain through Deep transverse friction and Kinesiology taping which reflects the study of **Prabhakar AJ, et al.(2013).**

Kinesiotaping along with deep transverse friction massage will have better results in improving the elbow flexion range and reducing pain in lateral epicondylitis. This above outcome of the study reflects and endorses the view of many research scholars who already proved this effect in lateral epicondylitis patients in their respective research. That happened because of vascular improvement and flexibility of common extensor tendon origin in lateral epicondylitis patients.

CONCLUSION

VII CONCLUSION

It is concludes that there is statistically significant improvement in elbow flexion range of motion and reduced Pain in lateral epicondylitis in badminton players of both Control group and experimental group. But there is statistically greater improvement in experimental group in which the subjects are given deep transverse friction and kinesiotaping.

LIMITATION AND RECOMMENDATION

VIII LIMITATION AND RECOMMENDATION

LIMITATION

1. Limited number of subjects.
2. Short Duration.
3. Age is curtailed.
4. Calibration of Measurements.
5. Patients selected from limited geographical area.

RECOMMENDATION

1. Subject population can be increased.
2. The study can be done for longer duration.
3. Geographical area can be increased.

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APPENDIX

X APPENDIX

APPENDIX-1

ASSESSMENT CHART

SUBJECTIVE EXAMINATION:-

Name :

Age :

Sex : □ □

Occupation :

Chief complaints :

Weight : kgs

Height : cms

HISTORY COLLECTION:-

a) Present Medical history

b) Past Medical history:

OBJECTIVE EXAMINATION:

ON OBSERVATION:

- General body built
- Musculature
- Deformity
- Tropic changes
- External appliances

ON PALPATION

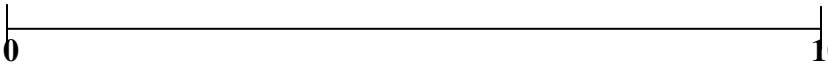
- Temperature
- Swelling
- Bony prominence
- Local tenderness
- Oedema or effusion
- Nodules
- Muscle spasm

ON EXAMINATION:

PAIN ASSESSMENT

- On set -
- Duration -
- Site of pain -
- Type of pain -
- Nature of pain -
- Aggrevating factors -
- Relieving factors -

USING VAS



0 **10**

No Pain Maximum

SENSORY EXAMINATION:

Temperature

Pressure

MOTOR EXAMINATION:

Muscle power assessment

Joint range of motion

DIAGNOSIS:

- X – Ray
- Medical Imaging
- Special Tests

a) Point tenderness □ + ve □ - ve

b) Self stretch Test □ + ve □ - ve

AIMS:

MEAN:

APPENDIX-2

PATIENT CONSENT FORM

I ……voluntarily consent to participate in the project named "A COMPARATIVE STUDY TO ANALYSE THE EFFECTIVENESS OF KINESIOLOGY TAPING AND CYRIAX DEEP FRICTION MASSAGE IN LATERAL EPICONDYLITIS AMONG BADMINTON PLAYERS ''

The candidate has explained to me that treatment approach in brief, risk of participation and has answered the questions related to the study to my satisfaction.

Participant's Signature :

Signature of witness :

Signature of candidate :

Date :

APPENDIX-3

Master Chart:

S.No	Patient Name	Age	Sex	BMI	Variables			
					Pain		ROM	
					Pre	Post	Pre	Post

Patient Sign **Physiotherapist Sign**

APPENDIX-4

Master Chart

Control Group

S.No	Patient Name	Age	Sex	BMI	Variables			
					Pain		ROM	
					Pre	Post	Pre	Post
1	P.Abinav	25	M	18.3	9	6	80	95
2	S.Karthi	27	M	19.1	7	4	70	85
3	R.Vijay	26	M	18.0	8	6	65	90
4	B.Pradeepkumar	35	M	18.5	9	5	70	95
5	Safer	26	M	19.7	9	5	65	85
6	Subair	27	M	18.0	6	3	70	95
7	S.Santoshkumar	34	M	21.2	9	6	75	90
8	V.Ananth	29	M	19.3	9	6	70	95
9	S.Nithees	33	M	23.4	8	5	60	90
10	S.Alexander	34	M	18.0	7	4	70	95

Master Chart

Experimental Group

S.No	Patient Name	Age	Sex	BMI	Variables			
					Pain		ROM	
					Pre	Post	Pre	Post
1	Rahul	29	M	19.7	9	2	70	115
2	K.Jai	31	M	18.0	6	3	80	100
3	Pushparaj	28	M	22.7	8	1	75	110
4	K.Praveenkumar	33	M	21.5	8	2	70	115
5	B.Venkat	32	M	22.1	9	3	80	100
6	S.Kalidhasan	29	M	18.4	7	1	90	115
7	S.Mani	35	M	23.5	9	1	85	110
8	Sooraj	26	M	18.6	8	1	60	115
9	Sivaraj	28	M	21.8	9	2	75	110
10	T.Prabha	31	M	18.7	8	1	70	115